

Title: Sigma Trac II Encoder Cleaning and Leveling Procedure

Product(s): Sigma Trac II

Doc. No. TN.ST2.02

Overview

This technical note instructs the user on the proper procedure for cleaning and leveling the Fagor optical linear encoder on Sigma Trac II linear stages.

Applicable Product

This procedure applies to all Sigma Trac II stages with part numbers matching ST2F-□□□□□□□□-□1□□. This procedure may apply to customized Sigma Trac II stages that use the Fagor optical linear encoder.

Equipment Needed

- Fagor 0.6mm shim
- 1.80 Nm torque screwdriver with 2.5mm hex bit
- 6mm hex key or bit screwdriver
- Lens cleaning wipes (denatured alcohol)
- Lint-free long handled cleaning swabs
- Long (6" min.) T-handle hex key (6mm hex for A1 carriage, 8mm hex for A2 & A3 carriages)
- Loctite 243 or equivalent (blue, workable)

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Process

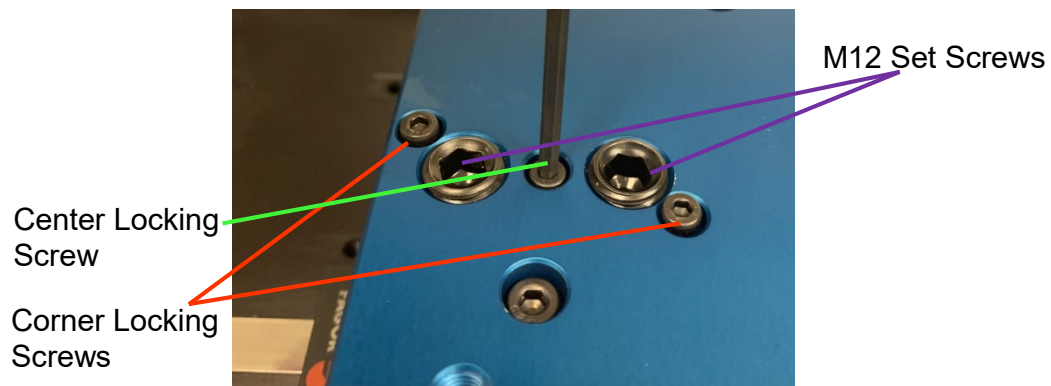


Figure 1: Name convention for encoder fastening screws

Cleaning Readhead

- Loosen M12 set screws with 6 mm hex key until screws extend 3 threads above top of carriage.
- Tighten Center & Corner Locking Screws with 2.5 mm hex bit screwdriver or hex key to raise readhead fully.
- Use cleaning swabs and/or lens cleaning wipes to clean both encoder readhead and encoder scale tape. The underside of the encoder readhead is shown in Figure 2.



Figure 2 Underside of encoder readhead

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- Aligning and Leveling Readhead
 - ▣ Clean the Fagor 0.6 mm shim.
 - ▣ Place Fagor 0.6mm shim between readhead and scale, ensuring that the shim is under the entire readhead as shown in Figure 3.



Figure 3: Shim placement between readhead and scale

- ▣ Completely unscrew corner locking screws.
- ▣ Refasten the corner locking screws $\frac{1}{4}$ to $\frac{1}{2}$ turn to keep the readhead from shifting.
- ▣ Unscrew center locking screw until the readhead is touching the shim.
- ▣ With a long T-handle hex key or equivalent, hold readhead mounting block flush with carriage. Continue holding until instructed to remove the T-handle hex key or equivalent later in this procedure. Proper placement of the hex key is shown in Figure 4.



Figure 4: Placement of the T-handle hex key or equivalent

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- ❑ Lightly screw in both M12 set screws until they touch the encoder mounting block. Finger tighten both set screws approximately 5 degrees.
- ❑ Remove center locking screw only and add Loctite to the screw.
- ❑ While continuing to hold mounting block flush with carriage, tighten center locking screw to 1.8 Nm.
- ❑ Remove one corner locking screw and add Loctite to screw. While continuing to hold mounting block flush with carriage, tighten corner locking screw to 1.8 Nm. Repeat for other corner locking screw.
- ❑ Remove long T-handle hex key or equivalent from holding position.
- ❑ With a light push, move carriage off of shim while holding shim down with finger.

NOTE: If carriage is pulling the shim with it, stop and repeat the procedure using less torque to tighten M12 set screws. Failure to do so could damage encoder readhead and scale.
- ❑ Clean scale tape of any finger oils from leveling procedure.
- ❑ Verify the encoder is level by applying control power to the SERVOPACK and encoder, and checking that encoder LED remains green throughout the entire travel length.